

REMARKS

This application was filed with 58 claims. Claims 1-37 and 46-58 were previously canceled or withdrawn. Claim 59 was previously added. Therefore, Claims 38-45 and 59 are pending in the Application. Claims 39, 43, and 45 have been allowed. Claims 38, 40-42, 44 and 59 have been rejected. Claims 38 and 59 have been amended. Reconsideration of the application based on the remaining claims as amended and arguments submitted below is respectfully requested.

Claim Rejections - 35 U.S.C. § 102(b)

Claims 38, 40-42, 44 and 59 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Balch (U.S. Patent No. 4,205,718). In response, Applicant has amended Claims 38 and 59.

Claim 38 as amended includes the limitation that the sub-surface geothermal heat exchanger comprises “sub-surface refrigerant tubing positioned to allow primary geothermal heat transfer directly to refrigerant fluid circulating in the sub-surface refrigerant tubing.” This feature is shown in Applicant’s Fig. 3 and described, for example, in paragraphs 59 and 78-80 of Applicant’s Specification. As shown and described, the system refrigerant circulates inside fluid transport line 51, with a portion thereof positioned below ground surface level 43, so that there is heat exchanged directly between from the ground 2 and fill material 4 to the sub-surface refrigerant. This, in fact, is the primary source of heat exchange in the system. Such a feature is not disclosed in Balch. Instead, the Balch system teaches

use of a system of thermal cell units 12 shown in Fig. 1 in a sub-surface location. As described by Balch in col. 3, lines 30-44, the thermal cell units 12 exchange heat with the surrounding earth. As Balch further explains in col. 2, lines 47-61, the thermal cell units 12 act as heat reservoirs and are filled with ethylene glycol filled mixed with water, alcohol and water, brine, alcohol and brine, or a petroleum-based product. Ducts 46 and 48 are used to transport the liquid from cell units 12 to the heat pump 14, where heat can be exchanged with refrigerant in the heat pump 14. In other words, unlike Applicant's invention, there is no direct geothermal heat exchange between the earth and refrigerant fluid circulating in sub-surface refrigerant tubing. Indeed, in Balch, the primary heat exchange results from solar heat exchange into the heat pump, supplemented by heat stored in the sub-surface cell units 12. Accordingly, Balch does not anticipate Claim 38, as amended.

Claims 40-42 and 44 are dependent on Claim 38 and are likewise not anticipated.

Claim 59 as amended includes the limitation "wherein at least a portion of the system refrigerant tubing is positioned in a sub-surface location to allow for primary geothermal heat transfer directly into the system refrigerant." As discussed above in relation to Claim 38, Balch does not disclose system refrigerant tubing "in a sub-surface location. Balch similarly does not disclose heat exchange directly between the earth and the system refrigerant. Instead, Balch shows and describes heat exchange from the earth to a heat storage fluid contained in cell units 12. This heat is then transferred (in heat pump 14) to the system refrigerant,

as a supplement to solar heat. Thus, Claim 59 as amended is not anticipated by Balch.

The rejection of Claims 38, 40-42, 44 and 59 under 35 U.S.C. § 102(b) should be withdrawn.

Claim Rejections - 35 U.S.C. § 103

Claim 41 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Balch. Claim 41 is dependent on Claim 38 which, as discussed above, contains a limitation not taught by Balch. Therefore, Applicant respectfully submits that Claim 41 is patentable over Balch.

Allowable Subject Matter

Claims 39, 43 and 45 are allowed.

Applicant has commented on some of the distinctions between the cited references and the claims to facilitate a better understanding of the present invention. This discussion is not exhaustive of the facets of the invention, and Applicant hereby reserves the right to present additional distinctions as appropriate. Furthermore, while these remarks may employ shortened, more specific, or variant descriptions of some of the claim language, Applicant respectfully notes that these remarks are not to be used to create implied limitations in the claims and only the actual wording of the claims should be considered against these references.

Pursuant to 37 C.F.R. § 1.136(a), Applicant petitions the Commissioner to extend the time for responding to the July 11, 2006, Office Action for three months from October 11, 2006, to January 11, 2007. Applicant encloses herewith a check in the amount of \$510 made payable to the Director of the USPTO for the petition fee.

The Commissioner is authorized to charge any deficiency or credit any overpayment associated with the filing of this Response to Deposit Account 23-0035.

Respectfully submitted,



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CERTIFICATE OF FIRST CLASS MAILING

I hereby certify that this Response and Amendment in Application Serial No.10/616,701 having a filing date of July 10, 2003, and a check in the amount of \$510, are being deposited with the United States Postal Service as first class mail in an envelope addressed to:

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

on January 11, 2007.

Mark J. Patterson

Signature

Registration Number 30,412

Date